Chapter 1

Project Description

This chapter provides a description of the proposed project, including the project location, objectives, and scope. Sites in the Sacramento-San Joaquin Delta where the DBW intends to use methods to control *Egeria densa* are identified. Methods proposed for controlling *Egeria densa* are described and linked to each proposed treatment site. A plan for conducting pre-treatment and post-treatment monitoring is provided. Intended use of this Environmental Impact Report (EIR) also are identified. This project description chapter is organized into the following ten sections:

1.1 Project Background
1.2 Objectives of the EDCP
1.3 Project Area Description
1.4 Project Scope
1.5 Areas of *Egeria* Infestation
1.6 Priority EDCP Sites
1.7 *Egeria densa* Control Methods
1.8 Proposed Control Methods for Priority EDCP Sites
1.9 Monitoring Program
1.10 Intended Uses of EIR.

1.1 Project Background

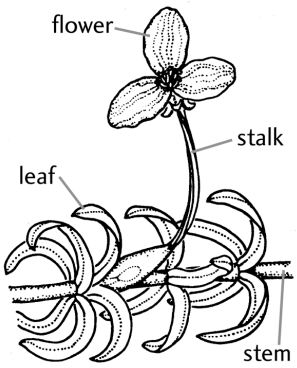
This section identities the legislation that required the California Department of Boating and Waterways (DBW) to implement a control program for the aquatic weed *Egeria densa* in the Delta. Also provided is a description of *Egeria densa* and an overview of the *Egeria densa* Control Program.

1.1.1 Assembly Bill 2193

Assembly Bill 2193 (AB 2193, Rainey, signed September 23, 1996, became law January 1, 1997) designated the Department of Boating and Waterways (DBW) as the lead agency to develop a control program for the aquatic weed *Egeria densa* in the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh. A copy of AB 2193 is provided in **Appendix A**. As a result of this legislative authority, the DBW is proposing to establish the *Egeria densa* Control Program (EDCP) and to conduct two-year research trials using Komeen. The EDCP and Two-Year Komeen trials are the subject of this Environmental Impact Report (EIR).

1.1.2 Description of *Egeria densa*

Egeria densa (*Egeria*, also known as Brazilian Elodea) is a non-native submerged aquatic weed that grows throughout the Delta. The plant is native to Southeast Brazil. *Egeria* has few natural predators because it was introduced from Brazil disease and insect-free. Spread of *Egeria* outside its native range has been attributed to the fact that it was once considered an important "oxygenator" for ponds and aquaria, and thus became widely available as an aquarium plant (Cook and Urmi-Konig, 1984).



***EGERIA DENSA* (BRAZILIAN ELODEA)**

Stems of *Egeria* usually are one foot to two feet long, but can be much smaller or larger. *Egeria*'s small leaves are strap-shaped, about one inch long and ¼ inch wide. The leaf margins have very fine saw teeth that require a magnifying lens to see. *Egeria* has dense whorls of three to six bright green leaves arranged around the stem. Flowers are on short stalks about one inch above the water. Flowers have white petals and are about ¾ inch across.

Egeria reproduces asexually, or vegetatively, through fragmentation. In this process, severed plant fragments regenerate into new plants capable of establishing themselves at new locations. Part of the widespread success of the plant is due to its ability to reproduce in this manner. Most of *Egeria's* biomass is produced near the water surface.

Egeria has spread uncontrolled since it was first introduced to the Delta several decades ago. *Egeria* may have spread to the Delta when an aquarium was dumped or when a boater carried it into Delta waters from an infested area. Factors that have caused *Egeria* to spread through the Delta include ideal weather and hydrologic conditions and the lack of natural controls (e.g., competing species, herbivores, and pathogens). *Egeria* appears to grow in spurts with the fastest growth likely occurring during periods of drought.

EGERIA IN THE DELTA

Dense mats of *Egeria* that form in the Delta are a hazard and nuisance because they can:

- Eliminate or hinder boat and vessel navigation
- Disrupt recreational activities such as water skiing, fishing, and swimming
- Clog agricultural irrigation intakes
- Slow water conveyance, requiring increased energy costs to pump water
- Displace native plant communities
- Upset balance of the aquatic environment.

1.1.3 The *Egeria densa* Control Program

The EDCP proposed by the DBW is a five-year program that would aim to control the growth and spread of *Egeria* in the Delta. The EDCP, would use a combination of chemical control methods (i.e., the aquatic herbicides Reward and Sonar) and a mechanical control method (i.e., mechanical harvesting) to control *Egeria* in Delta waterways.

The Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh constitute a diverse and highly complex ecosystem. Numerous ecological processes and relationships exist within this ecosystem. Consequently, implementing an effective *Egeria* control program that minimizes environmental impacts is challenging. The DBW has designed a flexible EDCP that would be adjusted as new information is generated about EDCP efficacy and environmental impacts.

The DBW would employ an adaptive management strategy in executing the EDCP. Adaptive management includes the following six fundamental program actions:

1. Evaluate the need for control measures on a site-by-site basis
2. Select appropriate indicators for pre-treatment environmental monitoring
3. Monitor indicators following treatment and evaluate data to determine program efficacy and environmental impacts
4. Support ongoing research to explore alternative control methodologies
5. Report findings from monitoring evaluations and research to regulatory agencies and stakeholders
6. Adjust program actions, as necessary, in response to recommendations and evaluations by regulatory agencies and stakeholders.

The EDCP also is based on Integrated Pest Management (IPM) and Maintenance Control (MC) practices. IPM denotes the coordinated use of available control methods for a particular pest. MC refers to practices that minimize plant biomass through regular, low-level, control treatments applied at times during a plant's life cycle when treatments are most effective. To minimize potential environmental impacts, the DBW would select the most appropriate chemical and/or mechanical control methods for a given site in the Delta based upon that site's conditions. The DBW also proposes to monitor results of the EDCP and base future control methods on these results. The selected method should attempt to provide the greatest reduction in *Egeria* biomass while avoiding or minimizing environmental impacts.

1.1.4 Two-Year Komeen Research Trials

The DBW also would conduct research trials over a two-year period using the copper-based herbicide Komeen. Although evaluated in this EIR along with the EDCP, these Komeen trials are not considered part of the EDCP. Komeen is not an herbicide that the DBW proposes to use for controlling *Egeria* over the five-year EDCP. Rather, because Komeen has potential significant unavoidable environmental impacts, the DBW would conduct a two-year limited research trial using Komeen to obtain information on the impacts of this herbicide in the Delta.

These trials are described in more detail in Section 1.7.4. Should the DBW conclude after completing this research that Komeen use is consistent with EDCP objectives (including minimizing environmental impacts), the DBW may prepare supplemental environmental documentation in accordance with CEQA requirements to incorporate its use into the EDCP. This EIR fully discloses potential environmental impacts of these proposed Two-Year Komeen trials, as it does with methods proposed for the EDCP.

The remainder of this document uses the term "Project" to mean the combination of the EDCP and the Two-Year Komeen Trials. Impacts of the EDCP are addressed in **Chapter 3**, while impacts of the Two-Year Komeen Trials are described in **Chapter 4**.

1.2 Objectives of the EDCP

The California Environmental Quality Act (CEQA) requires a clearly written statement of objectives in the project description so that users can compare how various project alternatives meet these objectives. The primary purpose of the EDCP is to prevent *Egeria* from continuing to grow and further impede navigation in Delta waterways. Through use of the EDCP, the DBW would clear and maintain adequate navigation channels for Delta users. The DBW would utilize control efforts that balance the need to control *Egeria* with the need to minimize resulting environmental impacts to Delta waterways.

A total of nine (9) specific objectives of the EDCP are identified in **Table 1-1** below. Table 1-1 also shows performance measures (i.e., outcomes) that the DBW would use to evaluate success of the EDCP in meeting these project objectives.

Table 1-1

***Egeria densa* Control Program**
Objectives and Performance Measures

Objectives	Performance Measures (Outcomes)
1. Limit future growth and spread of *Egeria* in the Delta. 2. Improve boat and vessel navigation in the Delta. 3. Utilize the most efficacious methods available with the least environmental impacts. 4. Prioritize sites so EDCP activities are focused on sites with a high degree of infestation and navigational significance. 5. Employ a combination of control methods to allow maximum flexibility.	❑ Reduce total acres infested with *Egeria*. ❑ Reduce Egeria biomass at high priority navigation sites currently infested with *Egeria*. ❑ Prevent infestation of new sites. ❑ Produce fewer incidents of boat navigation problems.
6. Improve the EDCP as more information is available on control methods used in the Delta. 7. Monitor results of the EDCP to fully understand impacts of the EDCP on the environment.	❑ Prepare reports for regulatory agencies and the public summarizing monitoring results. ❑ Increase the total efficacy level of the EDCP, and of each control method over time. ❑ Limit the number and significance of environmental impacts resulting from the EDCP.
8. Minimize EDCP control efforts, if sufficient efficacy of *Egeria* is realized. 9. Minimize use of methods that could cause adverse environmental impacts.	❑ Limit the number of acres treated with methods that have the potential for adverse environmental impacts. ❑ Reduce the quantity of herbicides applied to the Delta over time.

1.3 Project Area Description

CEQA requires that the project description identify the precise location and boundaries of the proposed project. An area map of the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh is provided in **Exhibit 1-1,** on the following page. The Sacramento-San Joaquin Delta (the Delta) and its tributaries form the lowest part of the Central Valley, lying between the Sacramento and San Joaquin rivers and extending from the confluence of the two rivers inland as far as Sacramento and Stockton. A legal definition of the Sacramento-San Joaquin Delta, as contained in Section 12220 of the California Water Code, is provided in **Appendix B**. The DBW will use this Delta definition in determining its scope of responsibility for the EDCP.

The Delta is roughly bordered by the cities of Sacramento, Stockton, Tracy, and Pittsburg. The Delta includes the cities of Antioch, Brentwood, and Isleton, and about 14 unincorporated towns and villages. The Delta is bordered to the north by the I Street Bridge in Sacramento, to the west by the Suisun Marsh Salinity Control Gates (near Pittsburg), to the south by the junction of Highways 5 and 205, and to the east by the Port of Stockton. A map of the legal delta is provided in **Appendix C**.

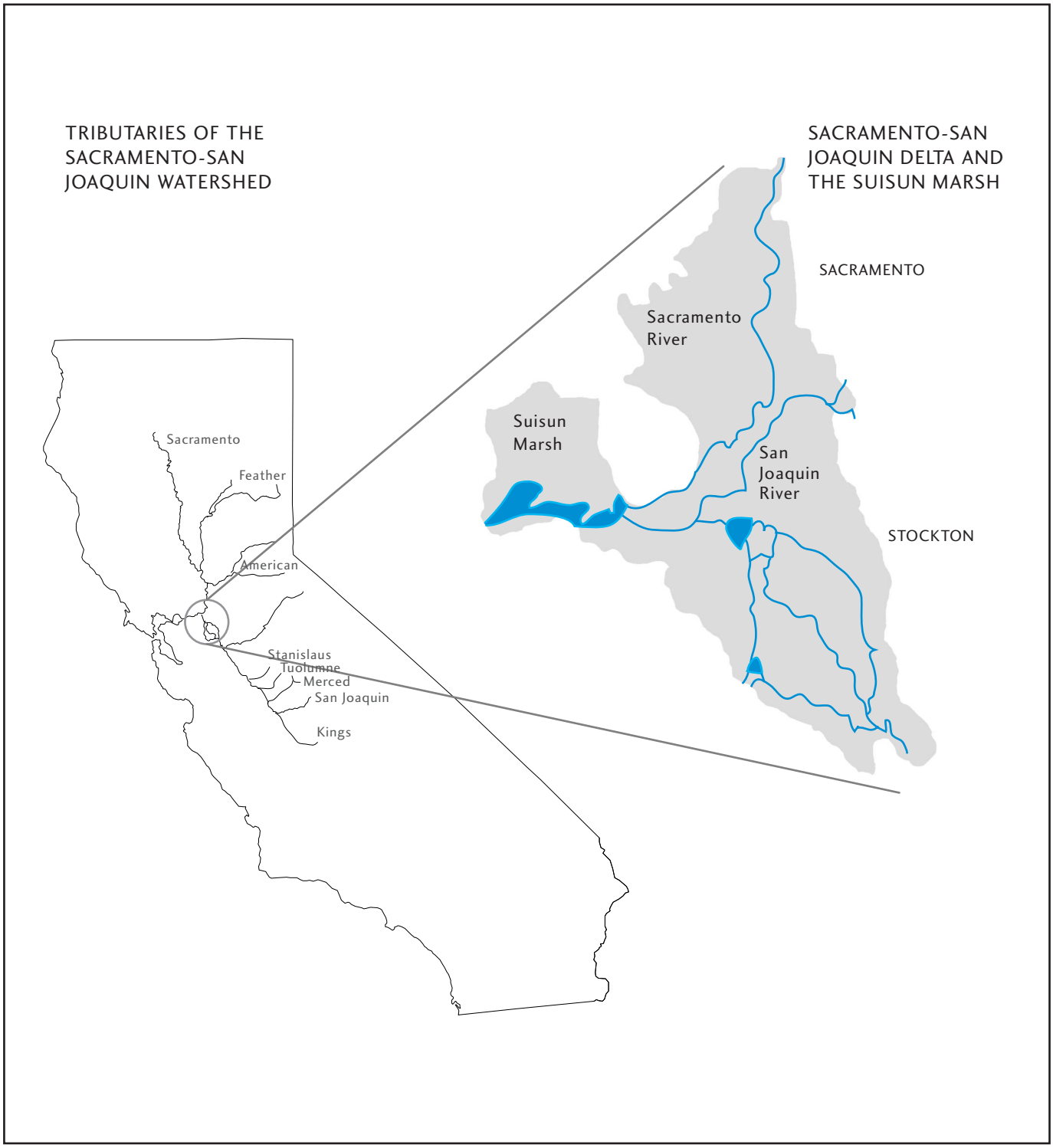
Covering approximately 738,000 acres, the Delta is interlaced with hundreds of miles of waterways. A total of 19 rivers flow into the Delta (listed in **Appendix D**). The Delta is within the jurisdiction of the six counties identified in **Appendix E**. The six water districts within the Delta region are listed in **Appendix F.**

Water movement in the Delta is complex due to effects of (1) diurnal tidal cycles, (2) seasonally variable net flows from snow melt, (3) highly variable bathymetric conditions (physical bottom characteristics), (4) the presence of aquatic macrophyte populations, and (5) water exports by the State Water Project and Central Valley Project.

A detailed description of the current Environmental Setting in the Delta is provided in **Chapter 2** of this EIR. CEQA requires the Environmental Setting to describe the baseline physical conditions in the vicinity of the project in order to determine whether the impacts of the project are significant.

EXHIBIT 1-1

Area Map of Sacramento - San Joaquin Delta and Suisun Marsh



1.4 Project Scope

This section describes the limitations of the proposed EDCP. The DBW had to make decisions about where to focus its control efforts. As a consequence, certain areas where *Egeria* is present may not be treated. This section also addresses areas identified for control in AB 2193 where *Egeria* is not present. Additionally, this section describes other non-target species of submerged vegetation, not identified in AB 2193, that could also be indirectly controlled by EDCP methods.

1.4.1 Five-Year EDCP

This EIR addresses EDCP impacts over a five-year control period. In each of the five years, the DBW would review the EDCP to determine if it is meeting the objectives identified in Table 1-1. The DBW does not intend to continue the EDCP if it is not providing a real and measurable benefit to navigation in Delta waterways while minimizing environmental impacts.

Should the DBW determine at any point during the five years that the EDCP is not meeting its objectives, the DBW will provide the Legislature and appropriate regulatory agencies with a recommendation to stop EDCP activities. Ultimately the Legislature and appropriate regulatory agencies would have to make the determination to stop EDCP activities.

Should the DBW determine after five years that the EDCP is meeting its intended objectives, the DBW would prepare supplemental environmental documentation, in accordance with CEQA requirements, to continue EDCP activities.

1.4.2 Suisun Marsh

AB 2193 specifies that the DBW should undertake an aggressive program to control *Egeria* in the Sacramento-San Joaquin Delta (Delta), its tributaries, and the Suisun Marsh. However, at the time of this writing there have been no observations of *Egeria* reported in the Suisun Marsh, and it is believed not to grow there. It is likely that brackish water conditions in the Marsh prohibits *Egeria* growth. The DBW has elected not to include the Suisun Marsh in the EDCP at this time because *Egeria* is not expected to occur in, or infest, the Marsh. Because of the rapid dilution and dissipation of the herbicides proposed for the EDCP and the Two-Year Komeen Trials, and the localized nature of the mechanical harvesters, neither the control procedures, nor the Komeen trials, are expected to significantly impact the

Suisun Marsh. Should the DBW find in the future that it has a need to control *Egeria* in the Suisun Marsh, the DBW would propose to modify the EDCP to include impacted Suisun Marsh areas and prepare supplemental environmental documentation in accordance with CEQA requirements.

1.4.3 Water Hyacinth

The DBW is the lead agency for a program aimed at controlling the growth of another aquatic plant in the Delta, the water hyacinth. The DBW has conducted an ongoing water hyacinth control program in the Delta since 1985. This EIR pertains solely to control of *Egeria* and does not relate to control of water hyacinth. *Egeria* and water hyacinth occupy different ecological niches and require different control methods.

1.4.4 Other Native and Non-Native Plants

In addition to *Egeria*, a number of native and non-native species of vegetation are present in Delta waters. AB 2193 does not identify these other species as target species for control. Key plant species present in Delta waters are shown in **Table 1-2** below.

Table 1-2

Plants Present in Delta Waters

Species		Presence in the Delta	Native
Echhornia crassipes	Waterhyacinth	**Significant**	**No**
Myriophyllum aquaticum	Parrot Feather	Minor	No
Myriophyllum spicatum	Eurasian Watermilfoil	**Moderate**	**No**
Ludwigia peploides	Water Primrose	Minor	Yes
Ceratophyllum demersum	Coontail	Minor	Yes
Hydrocotyle spp.	Pennywort	Minor	Yes
Cabomba caroliniana	Fanwort	Minor	Yes
Potamogeton spp.	Pondweeds	Minor	
P. nodosus	(American Pondweed)		Yes
P. pectinatus	(Sago Pondweed)		Yes
P. crispus	(Curlyleaf Pondweed)		No

Many of these non-target species may be affected by the proposed EDCP. However, it is difficult to predict the impact of treating Delta areas where these multiple different species are present. Most likely, EDCP activities also will control most of the species identified above.

1.4.5 Nursery Areas

For the EDCP, the DBW prioritized control at locations throughout the Delta where *Egeria* interferes with navigation. In doing so, the DBW will treat many areas within the Delta that also are considered "nursery" areas, or areas located in shallow water that provide an ideal habitat for *Egeria* growth. However, the DBW will not treat all of these nursery areas because its primary objective is to control *Egeria* for navigation purposes.

Egeria in Pixley Slough

1.5 Areas of *Egeria* Infestation

Areas of *Egeria* infestation within the Delta are shown in **Exhibit 1-2**, on the following page. Infested areas in Exhibit 1-2 depict the estimated percentage of waterbody surface area covered with *Egeria*, as captured by aerial photography. This map reflects the most current complete *Egeria* coverage data set available to the DBW.

Researchers at San Francisco State University, under contract with the DBW, are conducting further work to 1) provide a more current set of data from 1999 aerial photography, 2) corroborate information provided by aerial photographic surveys, and 3) develop updated estimates of *Egeria* biomass. This further work should be available in mid- to late-2000.

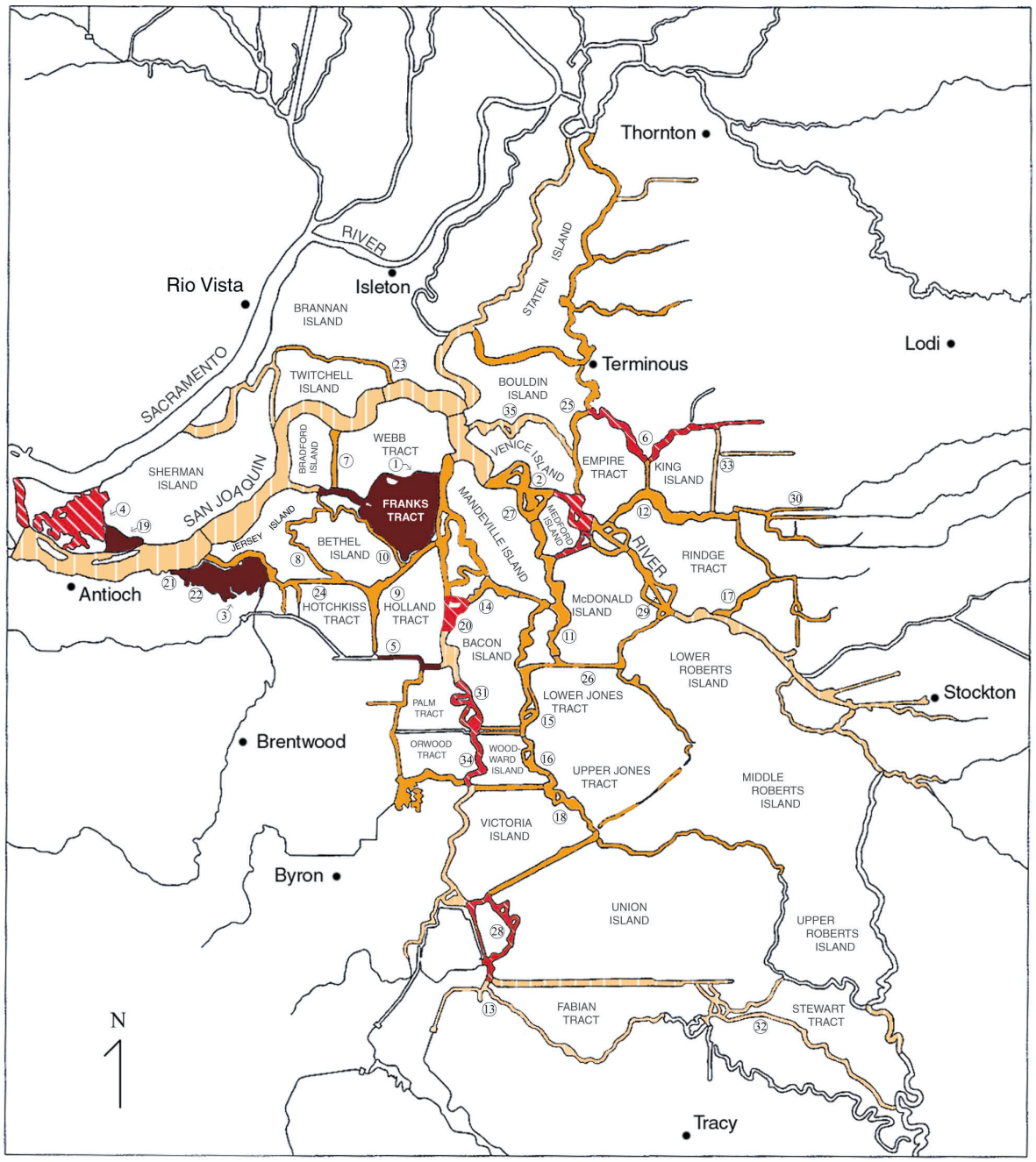
The Delta contains approximately 50,000 waterbody surface acres, of which an estimated 3,909 waterbody surface acres, or 7.8 percent, are infested with *Egeria*. *Egeria* biomass (i.e., the volume of *Egeria*) varies throughout the Delta based on the channel depth and the level of infestation. The DBW estimates approximately 26,000 acre-feet of *Egeria* biomass is present over the 3,909 surface acres.

Of the 3,909 surface acres, the DBW proposes to focus control efforts on approximately 1,733 acres at 35 priority sites over the five-year EDCP. These priority sites are discussed in Section 1.6.

EGERIA OBSCURING NAVIGATION IN THE CENTRAL DELTA

EXHIBIT 1-2

Egeria Infestation Levels and Locations of Proposed Treatment Sites in the Sacramento-San Joaquin Delta



Percent of Water Body Surface Area Covered with *Egeria*

0.10 to less than 10.0

10.0 to less than 20.0

20.0 to less than 30.0

greater than 30.0

0 2 4 6

Miles

Sources: CIR Aerial Photographs flown 16 September 1997 at 1:24,000 scale and Sacramento-San Joaquin Delta Atlas by Department of Water Resources (1993).

Cartography: SFSU Romberg Tiburon Center for Environmental Studies and NewPoint Group, Inc.

Note: Circled numbers represent areas that the DBW has prioritized to treat as part of the proposed EDCP.

1.6 Priority EDCP Sites

This section identifies each site the DBW has prioritized for control in the Delta. Also included is the quantity of surface acres the DBW has prioritized to control. These metrics are compared with the total estimated number of water body surface acres in the Delta.

Table 1-3 below shows the number of sites and the quantity of water body surface acres the DBW plans to control. Based on an analysis of aerial photos, the DBW identified 75 different sloughs, cuts, tracts, and other areas throughout the Delta infested with *Egeria*. These 75 sites correspond to the 3,909 surface acres of Delta waterways infested with *Egeria*.

The DBW does not propose to control *Egeria* at all 75 sites over the five-year EDCP. Instead, the DBW would focus its control efforts on a total of 1,733 surface acres at 35 sites over the five-year EDCP. In treating these 35 sites, the DBW would capture almost all of the areas truly posing navigational problems in the Delta. The methodology for prioritizing these 35 priority sites is described in **Appendix G**. Sites were ranked based on the degree of navigational impairment. Those with serious impairment were ranked highest. Though the DBW determined the 35 sites were higher priority, the numbering of these 35 sites in this chapter does not represent the priority for actual treatment.

Table 1-3

Sites and Acreage Proposed for Control Over the Five-Year EDCP

	Sites	% of Sites Identified with *Egeria*	Water body Surface Acreage	% of Total Delta Acreage	% of Acreage Infested with *Egeria*
Entire Delta	N/A	N/A	50,000	100%	N/A
Sites Identified With *Egeria* Infestation	75	100%	3,909	7.8	100%
Priority Sites to Control for Navigation	35	47	3,066	6.1	78
Sites with Acreage Proposed to Control for Navigation	**35**	47	**1,733**	**3.5**	**44**

The DBW determined that these 35 sites, which represent 47 percent of the total infested acreage, are critical to control for navigation purposes. These 35 sites represent 3,066 infested surface acres, or 6.1 percent, of the total Delta water body surface acres.

The 35 sites are described in **Exhibit 1-3**, atarting on page 1-17. For each of the 35 sites, the following information is provided: a brief description of the site; the estimated waterbody surface acreage of *Egeria* infestation; the percent of water body surface acreage covered with *Egeria*; the year aerial photography was taken (1997 or 1999); the approximate depth of *Egeria*; and the estimated biomass (in acre-feet) present at the site. The corresponding location of each of these 35 sites also is identified with a circled number in Exhibit 1-2 (e.g., site number 1 is Franks Tract).

As noted above, the DBW would not control the entire 3,066 infested surface acres of *Egeria* currently present at the 35 sites. At certain sites, the DBW determined that some of the infested acreage is not critical to control for navigation. As an example, the DBW would not treat the entire 715 surface acres infested with *Egeria* at Franks Tract. Instead, in order to open up Franks Tract for navigation, the DBW would create three 100-foot wide channels three miles long and one 100-foot channel four miles long, so that boaters could use these channels to cross Franks Tract.

The DBW estimates that of the 3,066 infested surface acres present at the 35 sites, it would only treat 1,733 infested surface acres, or 56 percent of the acreage at the 35 sites. These 1,733 infested surface acres represent just 3.5 percent of the total of 50,000 water body surface acres in the Delta. However, these 1,733 acres are 44 percent of the water body surface acres infested with *Egeria*.

***Egeria* Infestation in Disappointment Slough**

Due to resource limitations, the DBW has not conducted on-site field surveys to assess Egeria infestation at each treatment site. The DBW has relied on aerial photography to assess levels of Egeria infestation for each site in the Delta. However, aerial photography may not allow the DBW to assess areas of infestation at a site that pose immediate navigation problems, and those areas that do not. By using aerial photography alone without these on-site surveys, the estimated treatment acreage used by the DBW for the EDCP (i.e., 1,583 acres for years 1 and 2, and 1,733 acres for years 3 to 5) most likely represent the maximum acreage the DBW would treat.

By conducting field surveys at each Delta site, the DBW could develop a more accurate estimate of the Egeria infestation acreage that actually interferes with navigation. These field surveys could be performed using manual methods and techniques, or by tying field observations to a Geographic Information System (GIS) system (i.e., linking field observations to coordinates). Field surveys could be conducted over the five-year EDCP during times when DBW field crews are not conducting actual treatments. Benefits of these field surveys may include:

- Ground-truthing aerial photography results
- Identifying areas of infestation at each site that do not pose immediate navigation problems
- Reducing the number of acres the DBW proposes to treat for the EDCP
- Reprioritizing treatment sites
- Determining the most appropriate control method for a given site
- Maximizing use of DBW field crews during periods when treatments are not occurring.

EXHIBIT 1-3
Page 1 of 2

Description and Estimated *Egeria* Infestation of Proposed Treatment Sites

No. b)	Site	Description	Estimated Waterbody Surface Acreage Covered with *Egeria* a)	Percent of Waterbody Surface Acreage Covered with *Egeria*	Year of Aerial Photos	Approx. Depth of *Egeria*	Estimated *Egeria* Biomass (Acre-ft.)
1	Frank's Tract	A large, open, and shallow water body in the west Delta.	716	26%	1999	7	5,012
2	Venice Cut	A narrow channel centrally located in the Delta on the south side of Venice Island and east of Empire Tract.	147	17%	1999	8	1,176
3	Big Break I	A large, open, and shallow water body in the west Delta. This site does not have flow through capacity.	293	21%	1999	5	1,465
4	Sherman Lake	A large, open, and shallow water body in the west Delta.	370	25%	1997	4	1,481
5	Rock Slough	A heavily infested slough running from the south end of Sandmound Slough to Old River, south of Holland Tract.	37	34%	1999	6	222
6	White Slough	A slough on the north of Empire Tract and King Island, running from Little Potato Slough to Telephone Cut.	129	31%	1999	6	775
7	Fisherman's Cut	A cut directly north of False River at the west side of Franks Tract to the San Joaquin River.	21	21%	1999	8	170
8	Taylor Slough	A slough on the west end of Franks Tract running around Bethal Island and south to Dutch Slough. Frequently used to access Franks Tract from marinas along Dutch Slough.	13	9%	1999	8	105
9	Sandmound Slough	A slough on the west side of Holland Tract from Quimby Island to Rock Slough.	58	17%	1999	8	465
10	Pipers Slough	A slough on the southwest corner of Franks Tract connecting to Sandmound Slough.	19	12%	1999	8	155
11	Latham Slough	A slough on the west side of McDonald Island off of Middle River in the central portion of the Delta.	104	16%	1997	8	833
12	Disappointment Slough	A slough south of Empire Tract and King Island, running from the Stockton Deep Water Channel to Pixley Slough.	126	14%	1997	8	1,011
13	Old River Del's	The portion of Old River south of Clifton Court Forebay near Del's Boat Harbor.	23	8%	1997	7	161
14	Old River Connection	The north most portion of Old River where it meets Connection Slough on the north side of Bacon Island.	37	19%	1997	8	297
15	Middle River Bullfrog	The portion of Middle River next to Bulldfrog Landing and Marina, west of the Lower Jones Tract and South of Mildred Island.	57	19%	1997	7	401
16	Middle River Jones	The portion of Middle River on the west side of Upper Jones Tract and South to Woodward Canal.	38	19%	1997	6	229
17	14 Mile Slough	A slough east of the Stockton Deep Water Channel on the north side of Lower Roberts Island beginning near Windmill Cove Marina.	52	19%	1997	4	207
18	Middle River Victoria	The portion of Middle River between Woodward Canal and Union Point east of Victoria Island.	20	14%	1999	6	119
19	Donlon Island	A heavily infested island on the east side of Sherman Island bordering the San Joaquin River.	111	50%	1999	8	884
20	Rhode Island	An island on the northwest side of Bacon Island bordering Holland Tract along Old River.	88	28%	1997	8	704

a) Data from Romberg Center for Environmental Studies 1997 report titled "Estimating Egeria densa Acreage and Percent Coverage in the Sacramento-San Joaquin Delta DBW Priority Sites," and updated 1999 data for selected sites.

b) The numerical order does not represent a ranking in order of priority. These 35 sites collectively were determined to be high priority sites.

EXHIBIT 1-3
Page 2 of 2

Description and Estimated *Egeria* Infestation of Proposed Treatment Sites *(continued)*

No. b)	Site	Description	Estimated Waterbody Surface Acreage Covered with *Egeria* a)	Percent of Waterbody Surface Acreage Covered with *Egeria*	Year of Aerial Photos	Approx. Depth of *Egeria*	Estimated *Egeria* Biomass (Acre-ft.)
21	Big Break Wetlands	A heavily infested area on the westernmost side of Big Break.	55	77%	1999	5	275
22	Big Break II	A heavily infested area on the southwest corner of Big Break.	3	32%	1999	8	21
23	Seven Mile Slough	A slough on the west portion of the treatment area, north of Webb Tract.	23	7%	1999	8	184
24	Dutch Slough	A heavily traveled slough running from the east side of Big Break to Sandmound Slough through Bethal Island.	63	18%	1997	4	252
25	Little Potato Slough	A slough connecting Potato Slough with Whites Slough beginning at the intersection of Venice Island and Empire Tract.	30	11%	1997	9	270
26	Turner Empire Cut	A cut intersecting Latham Slough at Mildred Island with the Stockton Deep Water Channel, north of Lower Jones Tract and Roberts Island.	17	8%	1999	6	103
27	Little Venice Island	A small island bordered by Mandeville Island to the west, Medford Island to the east and Venice Cut to the north.	103	27%	1997	6	618
28	Coney Island	An island on the east side of Clifton Court Forebay.	72	24%	1997	6	434
29	Hog Island	An island east of McDonald Island, bordering the Stockton Deep Water Channel and Hog Cut.	20	5%	1999	6	119
30	Pixley Slough	A slough on the eastern side of the Delta, south of Bishop Tract beginning at Paradise Point Marina.	27	12%	1997	6	164
31	Bacon Island	Areas around Bacon Island, a large centrally located island in the Delta.	30	18%	1997	8	240
32	Paradise Cut	A cut on the southern portion of the Delta, on the south side of Stewart Tract intersecting Old River.	18	10%	1997	8	144
33	Bishop Telephone Cut	Bishop is located on the east side of the Delta, running along the west side of Bishop Tract and including Telephone Cut.	7	7%	1997	8	54
34	Old River Orwood	The portion of Old River bordering Orwood Island.	90	20%	1997	8	723
35	Potato Slough	A slough north of Venice Island between the Stockton Deep Water Channel and Little Potato Slough.	48	11%	1999	8	383
High Priority Treatment Sites		(N=35)	3,066				19,856
Low Priority Treatment Sites		(N=40)	833				6,265
Total			3,899				26,121

a) Data from Romberg Center for Environmental Studies 1997 report titled "Estimating Egeria densa Acreage and Percent Coverage in the Sacramento-San Joaquin Delta DBW Priority Sites," and updated 1999 data for selected sites.

b) The numerical order does not represent a ranking in order of priority. These 35 sites collectively were determined to be high priority sites.

1.7 *Egeria densa* Control Methods

This section describes control methods the DBW would use for the EDCP. The DBW considered a range of different control methods before deciding on the methods proposed for the EDCP. Infeasible control methods are identified in the Chapter 7, Project Alternatives. This section describes each control method, including advantages and disadvantages, usage limitations, and general protocols for each method.

The DBW conducted a series of research trials using the chemical and mechanical methods proposed in the EDCP. The aim of these trials was to assess the efficacy, and in some cases the potential environmental impacts of each control method. **Appendix H** provides a summary of the timing and location of these trials. **Volume II** of this EIR provides research report findings and copies of each of the research reports generated from these preliminary trials.

1.7.1 Chemical Control Methods

The DBW reviewed information on available registered aquatic herbicides to determine those that could be used for *Egeria* in the Delta. Ultimately, the DBW identified the following two registered aquatic herbicides, each of which is labeled for the control of *Egeria*:

1. Reward® (diquat dibromide), EPA Registration Number 10182-404
2. Sonar, including two formulations –
   - Sonar® A.S. (liquid formulation of fluridone), EPA Registration Number 67690-4
   - Sonar® SRP (granular formulation of fluridone), EPA Registration Number 67690-3.

DBW staff would apply these herbicides at labeled rates in accordance with California laws and regulations. A brief background of herbicides is provided in **Appendix I**. A description of each of the proposed aquatic herbicides follows.

1.7.1.1 Reward® (Active Ingredient - Diquat)

Reward is a broad-spectrum contact herbicide. Reward would be the primary EDCP control method. Reward is water soluble and non-selective. Diquat is the active ingredient in Reward. Diquat is fast-acting and rapidly taken up by aquatic vegetation. Diquat controls weeds by destroying cellular membranes.

Because it quickly binds with organic particles in water, diquat is not as effective in turbid water. Diquat quickly dissipates from treated waters to its biologically unavailable form by binding tightly to particles in the water column and bottom sediments. Once bound to most clay particles, diquat is biologically unavailable. When bound to organic matter, diquat is slowly degraded by microorganisms.

Reward should not be used in very close proximity to agricultural intakes when water is drawn for irrigation purposes. Due to the extensive amount of agriculture in the Delta, to avoid adverse impacts to agricultural crops, all herbicide treatments would be closely coordinated with the County Agricultural Commissioner's Office.

A copy of the Reward label and the Material Safety Data Sheet is provided in **Appendix J**. The DBW will apply Reward at labeled rates and consistent with the protocol identified in **Appendix L**.

1.7.1.2 Sonar® (Active Ingredient - Fluridone)

Sonar is a systemic aquatic herbicide with fluridone as its active ingredient. As a systemic herbicide, Sonar can kill roots and shoots of aquatic plants, thus producing a longer lasting effect than contact herbicides, such as Reward. Sonar is slow-acting and particularly effective in dead end sloughs with minimal tidal water exchange and insignificant water flows.

Because of the long uptake time needed for absorption and herbicidal activity, Sonar may be ineffective in flowing water situations due to rapid dilution. Like Reward, Sonar-treated water may be injurious to irrigated vegetation. For these reasons, Sonar will not be the primary EDCP control method.

The DBW intends to use two formulations of both. Sonar A.S. is a liquid formulation applied below the water surface. Sonar SRP is a controlled-release granular formulation broadcast over the treatment area.

The active ingredient in Sonar, fluridone, is absorbed both by plant shoots and through the hydrosoil by roots of aquatic plants. Fluridone inhibits formulation of carotene. In the absence of carotene, chlorophyll (the portion of the plant that converts carbon dioxide and water into carbohydrates) is rapidly degraded by sunlight.

Under optimum conditions, Sonar requires 30 to 90 days to reach the desired level of control. Sonar is most effective when applied during the early growth stages of the target plant. Susceptibility of a plant to fluridone may vary depending on time of year, stage of plant growth, and water movement.

Fluridone breakdown rates are variable and related to the time of application. Applications in fall or winter, when the sun's rays are less direct and days are shorter, result in longer product half-life (i.e., a longer time for the fluridone to stay in contact with the *Egeria*). Fluridone may remain in bottom sediments for four months to one year.

Copies of the Sonar A.S. and Sonar SRP labels and their Material Safety Data Sheets are provided in **Appendix K**. The DBW will apply Sonar at labeled rates and consistent with the protocol identified in **Appendix L**.

1.7.1.3 Herbicide Management

The DBW would follow the strict management plan described in **Appendix M** and follow the handling procedures and spill contingency plan in **Appendix S**. Reward and Sonar applications would be 1) documented on a daily basis, 2) consistent with labeled rates, 3) performed at designated sites only, 4) overseen by a project manager, and 5) performed consistent with day of treatment constraints identified in **Appendix P**. All chemicals used would be kept in locked storage. Applicators would have training on applying herbicides in Delta water.

1.7.2 Mechanical Control Methods

Mechanical control methods remove plants from water either by cutting them above their attachment points in the hydrosoil (mechanical harvesting), removing them from bottom sediments with a strong vacuum apparatus (suction dredging), excavating them with a clamshell dredge, or dislodging them from bottom sediments with a drag line. The DBW determined that all of these mechanical control methods were infeasible except mechanical harvesting.

Due to operational constraints and the potential for *Egeria* fragmentation the DBW proposes to use mechanical harvesting primarily for emergency use to gain immediate control of an area.

1.7.2.1 Mechanical Harvesting Operations

Mechanical harvesting consists of physically cutting and removing the above-ground portion of the plant and transferring the severed plant material to an off-site disposal location. Mechanical systems employ articulating cutter bars that can vary the cutting depth from the surface to approximately 10 feet.

Mechanical harvesters come in different sizes with various weed cutting and removal capabilities. The DBW plans to use a large harvester. Large harvesters have limited maneuverability in tight quarters, but with transport shuttles and shore-conveyer equipment they can remove large volumes of plant material from open areas relatively quickly.

Mechanical harvesting can clear several surface acres per day, depending on plant density, tides, currents, water depths, and off-loading access. Harvesters have limited use restrictions on a water body.

DBW preliminary research trials included a series of three mechanical harvesting efforts with an Aquatics Unlimited Aqua Moog harvester (shown in Exhibit 1-4). By the third harvest of the season, remaining *Egeria* material averaged only one-tenth of the original biomass. However, research showed that fragments created by the harvesting process were viable, and could potentially establish themselves elsewhere. Also, mechanical harvesting creates significant amounts of unwanted plant biomass and fragmented material that must be disposed of in a satisfactory manner. Following harvesting, plant material will regrow.

1.7.2.2 *Egeria* Disposal from Mechanical Harvesting

Finding disposal sites for *Egeria* is difficult due to its water content. *Egeria* contains approximately 93 percent water. This moisture content is considered too excessive for a class III landfill.

The DBW had samples of *Egeria* analyzed for the presence of 17 different metals, sulfide, and total cyanide. Samples were analyzed by a state-certified laboratory using U.S. Environmental Protection Agency (USEPA) analytical methods for the following (USEPA methods are noted in parentheses): antimony, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, vanadium, zinc (6010); arsenic (7060); mercury (7471); selenium (7740); thallium (7841); cyanide (9010); and sulfide (9030).

Results of these analyses were sent to the Department of Toxic Substances Control for review. Concentrations reported all were well below the Total Threshold Limit Concentration hazardous waste criteria. In addition, the results were so low that extraction with the Waste Extraction Test was not necessary. These findings indicate *Egeria* does not accumulate harmful or toxic constituents, and thus would not contaminate disposals sites.

The DBW proposes to dispose of harvested *Egeria* on fallow agricultural land in the Delta. With landowner permission, the DBW would place harvested *Egeria* on agricultural land near the mechanical harvest sites. Exact locations would vary with harvest locations.

Prior to disposal of *Egeria*, the proposed disposal site would be surveyed for sensitive or endangered species. If any sensitive or endangered species were found, the DBW would find an alternate disposal site.

From the research trials, the DBW estimates between 3/4 to 3 1/3 tons (wet weight) of *Egeria* would be produced per acre harvested. With the possibility of harvesting up to 10 acres a day, the DBW estimates approximately 7 to 33 tons (wet weight) of *Egeria* could be produced in a day.

Steps for harvesting *Egeria* are displayed in sequence in **Exhibit 1-4**, on the following page. Harvested *Egeria* would be transported from the harvester to a: "transport barge" and then to a conveyor belt securely positioned on the levee. A disposal vehicle would be positioned under the conveyor belt to catch harvested *Egeria* as it falls off the conveyor. Harvested *Egeria* then would be moved by the disposal vehicle to a disposal site.

Egeria would be disposed of, and spread out, manually to a depth of no more than one foot. Plant material would be left to dry for approximately 30 days. Once dry, harvested *Egeria* could be disked into soil.

To ensure that *Egeria* would not be introduced into any other California waters the DBW would abide by the following guidelines:

- No disposal would occur that would cause a violation of the Safe Drinking Water and Toxic Enforcement Act (Health and Safety Code Section 25249.5).
- No disposal would be made within 30 feet of any irrigation ditch or canal.
- No disposal would be permitted on frozen or saturated ground or during periods of heavy rain.
- No disposal would be permitted in areas subject to erosion or washout off-site.
- No disposal would be made within 150 yards of any residence.

EXHIBIT 1-4

Harvesting *Egeria densa*

STEP 1: HARVESTING WITH AQUA MOOG WEED HARVESTER

STEP 2: HARVESTER TRANSFER TO TRANSPORT BARGE

STEP 3: TRANSFER FROM TRANSPORT BARGE TO CONVEYER BELT ON DELTA LEVEE

STEP 4: FILLING DISPOSAL VEHICLE

STEP 5: DISPOSAL TO NEARBY FALLOW AGRICULTURAL LAND

1.7.2.3 Potential Operational Constraints Associated with Harvesting

Even though the DBW would assure mechanical harvesting operations would be performed with minimal impacts, harvesting poses a number of potential operational problems, including the following:

- Harvested *Egeria* will produce fragments of plant material that, if not collected and disposed of properly, would greatly contribute to the spread of *Egeria*. Therefore, DBW crews or harvesting contractors would attempt to collect floating *Egeria* by sweeping the water surface with nets and collecting viable plant fragments. *Egeria* fragments then would be transported to shore and disposed of. However, many fragments would not be collected.
- In larger bodies of water, harvesting logistics may be overwhelming. It would be difficult to capture the large amount of harvested *Egeria* and haul it to an appropriate disposal facility.
- In deep waters the harvester may not reach all of the *Egeria*.
- Using mechanical harvesting while *Egeria* is still actively growing could enhance its growth rate. In many cases, *Egeria* also will grow back to levels present prior to harvesting.

1.7.4 Two-Year Komeen Research Trials

Komeen is a non-selective liquid contact herbicide that contains eight-percent elemental copper. Komeen is water-soluble and non-selective. The herbicide acts by inhibiting photosynthesis. Komeen effectiveness is based on absorption into plant tissue; therefore, proper application is essential.

Komeen is by far the most effective method for *Egeria* control in the Delta. The DBW conducted small-scale and limited field trials using Komeen during 1998 and 1999, and determined that the estimated efficacy of Komeen in the Delta would be between 80 and 90 percent over a five-year period if it were used for *Egeria* control. The trials showed that Komeen is effective at controlling *Egeria* growth even in high flow conditions such as those present in the Delta. Further, there are no use restrictions on Komeen (e.g., potable water supplies). The Komeen label and Material Data Sheet are provided in **Appendix N**.

However, the DBW is not proposing to use Komeen as part of the EDCP because of the uncertainty concerning the impact Komeen would have on the Delta environment. To determine the long-term fate of Komeen in the Delta, the DBW plans to conduct two-year research trials using Komeen. These trials are proposed as a separate program apart from the control methods identified in the EDCP.

Komeen has more operational limitations and potential environmental impacts than the proposed EDCP control methods. For example, the water quality standard for copper in Central Valley inland surface waters is 10 ppb (0.01 ppm) (CVRWQCP 1998).

The DBW is proposing to conduct these trials to better understand the potential long-term fate of Komeen in Delta sediments. The two-year trials are designed to determine whether Komeen applications produce measurable increases in downstream sediment copper load and whether the copper compound in Komeen could ionize to more toxic forms of copper. Additionally, laboratory toxicity tests would be conducted to assess Komeen toxicity to certain fish species, such as Chinook salmon.

The DBW intends to conduct these Komeen research trials over the next two years. Should results of these trials suggest that Komeen is consistent with the objectives of the EDCP, and it does not result in significant environmental impacts, the DBW may consider incorporating Komeen into the EDCP. At such time, the DBW would prepare supplemental environmental documentation in accordance with CEQA. Potential environmental impacts associated with the Two-Year Komeen research trials are provided in Chapter 4.

The DBW would conduct these trials at three 50-acre sites in the Delta. Two of the three sites proposed, Sherman Island and Big Break, are high flow sites. The other site proposed, Disappointment Slough, has lower flow and less tidal exchange areas. The DBW proposes to treat each of the sites twice per year for two years for a total of 300 treatment acres per year, or 600 treatment acres over the two years.

The DBW would apply Komeen for these trials using weighted hoses dragged below the water surface over the entire target area. The DBW would apply Komeen at rates based on the infestation level, not to exceed the maximum labelled rate of 0.75 parts per million (ppm) copper. The target water column concentration would range from 0.5 to 0.75 ppm copper. To be effective, Komeen requires a 3 to 6-hour contact time.

At 0.75 ppm, the total amount of Komeen applied to the three 50-acre sites would be approximately 6,075 gallons per year, or 12,150 gallons over the two-year trial period. This estimate assumes an 8-foot depth at each site and 0.8 pounds of active ingredient per unit. The calculation methodology is similar to that shown for Reward in Exhibit 1-7.

1.8 Proposed Control Methods for Priority EDCP Sites

As indicated, the DBW used a structured decision-making process to determine which sites it would treat. The DBW also used a methodology for determining the potential control methods it would use and how control results would be monitored. **Exhibit O-1**, in **Appendix O**, identifies the process and outcomes associated with each phase of the DBW's decision making process. In the future, the DBW would use this methodology for determining potential new sites to treat, methods to use, and monitoring procedures.

The remainder of this section identifies the control methods proposed for each of the 35 priority sites. The section provides a summary of the number of surface acres treated by control method for each of the 35 priority sites. Also included are the timing of proposed treatments, the expected efficacy levels for the control methods, and the estimated quantity of chemicals applied per year.

1.8.1 Control Method Proposed for Each Site

Exhibit 1-5, on the following page, shows the control methods that the DBW would use to treat the 35 high priority sites. Based on the likely conditions at each site, the DBW has identified the control methods it would use for each site. **Exhibit 1-6**, following Exhibit 1-5, shows the quantity of acreage, by control method, for each site. **Table 1-4** below summarizes the estimated number of acres that the DBW would control with each method. In years 1 and 2 the DBW would conduct Komeen trials at three locations of 50-acres each for a total of 150 acres. In years 3 through 5 these three sites would be controlled using methods proposed for the EDCP.

Table 1-4

Estimated Acreage Controlled Using Each EDCP Control Method

Control Method	Acreage (Yrs 1-2)	Percent of Total Acreage	Acreage (Yrs 3-5)	Percent of Total Acreage
Reward - Diquat [a]	1,224	78%	1,324	76%
Sonar A.S. - Fluridone [b]	177	11	227	13
Sonar SRP - Fluridone [b]	130	8	130	8
Mechanical Harvesting	52	3	52	3
Total	1,583	100	1,733	100

[a] A total of 100 acres shown for Reward would be treated with Komeen under the two year research trials proposed in years 1 and 2.
[b] Another 50 acres shown for Sonar AS would be treated with Komeen under the two year research trials proposed in years 1 and 2.

EXHIBIT 1-5

Proposed Control Methods for Each Site

No.	Site	Planned Treatment	Likely Hyrodologic Conditions During Treatment				Proposed Control Method(s)	Expected 5-Year Efficacy
			Water Flow	Tidal Exchange	Turbidity	Other, If Applicable		
1	Frank's Tract	Clear 3, 100', 3 mi. channels and 1, 100', 4 mi. channel.	High	Large	Lower than avg.	N/A	Reward w/Sonar SRP in selected areas.	25 to 50%
2	Venice Cut	Treat areas in and around Venice Isl.	High	Very large	Unknown	N/A	1/2 Reward and 1/2 Sonar AS	25 to 50%
3	Big Break I	Clear 2, 100', 3 mi. channels	High	Partial	Lowest turbidity Mar/Apr/Oct/Nov	N/A	Komeen Trials (Yrs. 1/2), Reward (Yrs. 3-5)	50 to 70%
4	Sherman Lake	Create navigation channels.	High	Large	Lowest turbidity Aug to Nov	N/A	Komeen Trials (Yrs. 1/2), Sonar AS (Yrs. 3-5)	50 to 70%
5	Rock Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
6	White Slough	Treat center of waterbody, primarily east end of slough.	High	Large	Unknown	N/A	Reward, Sonar SRP, and Mechanical Harvesting	25 to 50%
7	Fisherman's Cut	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
8	Taylor Slough	Treat center of waterbody to clear navigation.	High	Large	Lowest turbidity Aug to Nov	N/A	Reward w/Sonar SRP in selected areas.	25 to 50%
9	Sandmound Slough	Treat center of waterbody to clear navigation.	High	Large	Unknown	N/A	Diquat w/potential Mech. Harvesting in some areas.	25 to 50%
10	Pipers Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
11	Latham Slough	Treat areas in and around Mildred Isl.	High	Large	Unknown	N/A	Reward	25 to 50%
12	Disappointment Slough	Treat center of waterbody to clear navigation.	High	Large	Lowest turbidity Aug to Nov	N/A	Komeen Trials (Yrs. 1/2), Reward (Yrs. 3-5)	50 to 70%
13	Old River Del's	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Sonar AS	50 to 70%
14	Old River Connection	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
15	Middle River Bullfrog	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
16	Middle River Jones	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
17	14 Mile Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Sonar SRP	50 to 70%
18	Middle River Victoria	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
19	Donlon Island	To be determined.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
20	Rhode Island	To be determined.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
21	Big Break Wetlands	Treat areas in and around wetlands.	High	Moderate	Unknown	N/A	Sonar AS	25 to 50%
22	Big Break II	Treat areas in and around marina.	High	Moderate	Unknown	N/A	Sonar AS	25 to 50%
23	Seven Mile Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50%-70%
24	Dutch Slough	Treat center of waterbody to clear navigation.	High	Large	Unknown	N/A	Reward	50 to 70%
25	Little Potato Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
26	Turner Empire Cut	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
27	Little Venice Island	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
28	Coney Island	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
29	Hog Island	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
30	Pixley Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Sonar SRP	50 to 70%
31	Bacon Island	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
32	Paradise Cut	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
33	Bishop Telephone Cut	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
34	Old River Orwood	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%
35	Potato Slough	Treat center of waterbody to clear navigation.	Moderate	Moderate	Unknown	N/A	Reward	50 to 70%

EXHIBIT 1-6

Egeria Acreage Associated with the Control Method Proposed for Each Site (Years 1-2)

No.	Site	Estimated Waterbody Surface Acreage Covered with *Egeria* a)	Estimated Area Necessary to Treat for Navigation Purposes	Proposed Control Method				
				Reward - Diquat	Sonar AS - Fluridone (Aqueous)	Sonar SRP - Fluridone (Pellet)	Mechanical Harvesting	Komeen - Copper Trials
1	Frank's Tract	716	158	142		16		
2	Venice Cut	147	147	74	74			
3	Big Break I a)	293	73	23				50
4	Sherman Lake b)	370	73		23			50
5	Rock Slough	37	37	37				
6	White Slough	129	129	65		32	32	
7	Fisherman's Cut	21	21	21				
8	Taylor Slough	13	13	10		3		
9	Sandmound Slough	58	58	38			20	
10	Pipers Slough	19	19	19				
11	Latham Slough	104	104	104				
12	Disappointment Slough a)	126	126	76				50
13	Old River Del's	23	23		23			
14	Old River Connection	37	37	37				
15	Middle River Bullfrog	57	57	57				
16	Middle River Jones	38	38	38				
17	14 Mile Slough	52	52			52		
18	Middle River Victoria	20	20	20				
19	Donlon Island	111	12	12				
20	Rhode Island	88	88	88				
21	Big Break Wetlands	55	55		55			
22	Big Break II	3	3		3			
23	Seven Mile Slough	23	23	23				
24	Dutch Slough	63	63	63				
25	Little Potato Slough	30	30	30				
26	Turner Empire Cut	17	17	17				
27	Little Venice Island	103	12	12				
28	Coney Island	72	12	12				
29	Hog Island	20	12	12				
30	Pixley Slough	27	27			27		
31	Bacon Island	30	30	30				
32	Paradise Cut	18	18	18				
33	Bishop Telephone Cut	7	7	7				
34	Old River Orwood	90	90	90				
35	Potato Slough	48	48	48				
	Priority Treatment Sites	3,066	1,733	1,224	177	130	52	150
	Percent of Total (Yrs. 1 & 2)			70%	10%	8%	3%	9%
	Low Priority Treatment Sites	842	699					
	Total	3,908	2,432					

a) In years 3 through 5, treated with Reward.
b) In years 3 through 5, treated with Sonar A.S.

1.8.2 Timing of EDCP Control Efforts

This section identifies the proposed timing of EDCP control efforts. Also discussed are treatment restrictions that could occur on a proposed treatment day.

1.8.2.1 Time of Year Restrictions

The DBW proposes treatments for the nine months between March and November of each year. During this period *Egeria* sends long lateral stems from the parent stem and thus causes the most problems with boats and pumps.

The ideal time to treat *Egeria* is late May through June at the peak of the growth cycle. Due to resource constraints and because of environmental concerns (i.e., the timing of fish runs) the DBW would not treat *Egeria* at all sites in the Delta during the optimum point in *Egeria's* growth cycle.

In between growing cycles, *Egeria* lies somewhat dormant; lateral stems die and break off as starches move down into the main stem to the roots. During the winter, *Egeria* growth is bushy and clump-like. During the period between November and February, especially at high tide, *Egeria* may not be visible. The DBW would not treat during these winter months.

1.8.2.2 Day of Treatment Restrictions

Several factors would influence the timing and logistics of a selected control method. The DBW would examine a series of indicators just prior to treating a site. The DBW would assess the presence or degree of these indicators and modify control plans accordingly. These ten treatment indicators include day length, precipitation, recreational activity, sunlight, tidal water exchange, vessel traffic, water depth, water flows, water turbidity, and wind. **Appendix O** describes the method the DBW would use to identify day of treatment restrictions.

1.8.3 Estimated Efficacy of Proposed EDCP Control Methods

EDCP control methods would not result in complete efficacy of *Egeria* over a five-year period. **Table 1-5** below shows that in general efficacy levels would be 30 to 50 percent for Reward, and 70 to 80 percent for both types of Sonar, where 100 percent efficacy represents complete control. Mechanical harvesting would not result in substantial long-term efficacy because *Egeria* would grow back.

Table 1-5

Potential Efficacy Levels of Proposed EDCP Control Methods
(Under Selected Delta Conditions)

Control Method	Delta Conditions	Expected Range of Efficacy within 5 Years (percent)[ab]
Reward - Diquat	General Range	30-50
	Low Turbidity	40-50
	Moderate Turbidity	30-40
	High Turbidity	30 and below
Sonar - Fluridone (AS & SRP)	Slow Moving Quiescent Waters [c]	70-80
Mechanical Harvesting	Emergency Only	No long-term efficacy, *Egeria* will regrow

[a] Where 100 percent equals full control of *Egeria*.
[b] Delta conditions vary considerably. It is impossible to predict the combinations of conditions at the time of treatment. These figures are for information purposes.
[c] The DBW would not use Sonar in cases where Delta conditions are not ideal for its use (i.e., other that slow moving quiescent waters).

With an estimated growth rate for *Egeria* of four (4) percent per year (i.e., 100 acres per year over 40 years) and the range of efficacy levels noted above in Table 1-5, the net affect of the proposed EDCP on the 1,733 acres of *Egeria* treated would be a decrease of approximately 416 to 762 acres, as shown in **Table 1-6**, on the following page. This analysis does not reflect the fact that as *Egeria* is controlled each year, the growth rate would be applied to a progressively smaller acreage (i.e., the dynamic effect of efficacy and growth).

The DBW has projected that over the five-year period it would need to provide continuous control for 1,733 surface acres. After this five year period it might be possible for the DBW to reduce the amount of aquatic herbicides used per year. However, this reduction in use would only be possible with reasonable EDCP efficacy over the five-years and no newly introduced high priority infestation sites.

In the future, the DBW also would need to be proactive in maintaining areas that could potentially become infested or are purely nursery areas. However, it is possible that overall chemical control levels would decline if the program extended beyond the proposed 5-year period.

Table 1-6

Estimated Efficacy of Proposed EDCP
(Over 5 Years)

Chemical	Initial *Egeria* Acreage	Annual Increase in *Egeria* Acreage	Maximum *Egeria* Acreage After 5-Years Without Control	Minimum Efficacy Level	Maximum Estimated *Egeria* Acreage after 5-Years	Maximum Efficacy Level	Minimum Estimated *Egeria* Acreage after 5-Years
Reward - Treatment for 3 Years a)	100	4%	122	30%	85	40%	73
Reward - Treatment for 5 Years	1,224	4%	1,489	30%	1,042	50%	745
Sonar A.S. - Treatment for 3 Years a)	50	4%	61	70%	18	75%	15
Sonar A.S. - Treatment for 5 Years	177	4%	215	70%	65	80%	43
Sonar SRP - 5 Years	130	4%	158	70%	47	80%	32
Mechanical Harvesting - 5 Years	52	4%	63	0%	63	0%	63
Total	**1,733**		**2,108**		**1,320**		**971**
Reduction in Infestation Acreage					**413**		**762**
Percent Reduction in Infestation					24%		44%

a) Acreage used for Komeen Research Trials in Years 1 and 2.

1.8.4 Estimated Amount of Aquatic Herbicides Applied to Delta Waters Per Year

Exhibit 1-7, on the following page, shows a sample calculation for the estimated quantity of Reward and Sonar the DBW would use for year 3 of the EDCP. **Table 1**-7 below summarizes the quantity of aquatic herbicides that would be applied over the five-year EDCP. An approximate total of 51,300 gallons of Reward, 1,340 gallons of Sonar A.S., and 67,400 pounds of Sonar SRP would be applied over the 5-year EDCP.

Table 1-7

Estimated Quantity of Aquatic Herbicides Applied
(Over 5-Year EDCP)

Control Method	Amount Per Year		Total
	Years 1-2	Years 3-5	
Gallons			
Diquat	9,783	10,582	51,312
Sonar A. S.	229	294	1,340
			52,652
Pounds			
Sonar SRP	13,480	13,480	67,400

EXHIBIT 1-7

Estimated EDCP Chemical Application Summary

(Sample - Year 3)

Chemical	Treated *Egeria* Acres Per year	Applications Per Acre Per Year	Acreage Chemical Applied to Per Year	Average Treatment Depth (ft.)	Acre-Feet Chemical Applied to Per Year
Reward d)	1,324	2	2,648	8	21,184
Sonar (A.S.) e)	227	12	2,724	8	21,792
Sonar (SRP) e)	130	12	1,560	8	12,480
Total	1,681		6,932		55,456

Chemical	Label Rate (Parts per million, ppm)		Application Concentration (Parts per million, ppm)	Pounds of Active Ingredient (AI) a)	Pounds of AI Per Unit b)	Chemical Applied (Gallons Formulation/ Year) c)	Chemical Applied (Lbs. Formulation/ Year) c)
	Low	High					
Reward d)	0.370 e)	0.370 e)	0.370	21,163	2.00	10,582	N/A
Sonar (A.S.) e)	0.075	0.150	0.020	1,177	4.00	294	N/A
Sonar (SRP) e)	0.075	0.150	0.020	674	0.05	N/A	13,480
Total				23,014		10,876	13,480

a) The formula for converting parts per million (ppm) to pounds of active ingredient is: Acre-feet x ppm x 2.7
This formula is based on the fact that 1 acre-feet weighs 2,700,000 pounds. A total of 2.7 pounds of substance in 1 acre-feet of water is equivalent to 1 part per million (i.e., 2.7/(2,700,000)).
The Reward calculation is as follows: (21,184 x 0.37 x 2.7) = 21,163.

b) For Reward and Sonar (A.S.), this conversion is in pounds of active ingredient (AI) per gallon of formulation. For Sonar (SRP), this conversion is in pounds of AI per pound of formulation.

c) To calculate gallons or pounds of chemical formulation, divide pounds of active ingredient by the pounds of active ingredient per unit of formulation.

d) Acreage of chemical applied for Reward is 2 times the treated *Egeria* acreage because the application would be applied two times during the year.

Acreage of chemical applied for Sonar is 12 times the treated *Egeria* acreage because for one treatment Sonar is applied twelve times over a 6 to 8 week period.

e) Based on the registration for Special Local Need For Distribution And Use Only Within the State of California.

1.9 Monitoring Program

This section present the monitoring program that the DBW would use to meet the requirements of regulatory agencies and to gain insight into the effectiveness of the EDCP. Included is a discussion of proposed pre-treatment and post-treatment monitoring procedures. Monitoring is separately provided for the EDCP and for the proposed Two-Year Komeen trials.

1.9.1 Pre-Treatment and Post-Treatment Monitoring of EDCP Operations

Pre-Treatment Monitoring of EDCP Operations

The DBW would perform pre-treatment monitoring at EDCP sites. The primary objectives of pre-treatment monitoring would be to determine the type and intensity of *Egeria* treatment, and to establish baseline information to use later in assessing environmental impacts and treatment efficacy. The DBW would conduct pre-treatment monitoring using indicators in the following categories:

- **Biological** indicators including presence of sensitive species (e.g., threatened, endangered, and other special status species), *Egeria* biomass and fragmentation.
- **Chemical** indicators including chemical levels in sediment, chemical levels in the water column, dissolved oxygen, water hardness, and water pH.
- **Physical** indicators including water flow, water temperature, and water turbidity.

The DBW may not conduct pre-treatment monitoring of certain indicators at every treatment site, but rather at a representative number of treatment sites to be determined through consultation with the appropriate regulatory agencies. Data collected would be compared with post-treatment monitoring results and used principally for regulatory compliance purposes.

Exhibit 1-8, on the following page, identifies the extent of the pre-treatment monitoring proposed by the DBW. **Appendix P** describes in greater detail how the DBW would measure and use these pre-treatment indicators.

Post-Treatment Monitoring of EDCP Operations

The DBW would monitor *Egeria* control efficacy and environmental impacts that may have occurred as a result of the treatment. This ongoing post-treatment monitoring program would assess actual environmental impacts of EDCP and Komeen Trial operations and ensure these impacts remain

EXHIBIT 1-8
Page 1 of 2

Pre-Treatment and Post-Treatment Monitoring Proposed for the *Egeria densa* Control Program[a]

Description of Monitoring Indicator and Timing of Pre- and Post-Treatment	Level of Monitoring for Each EDCP Method					
	Reward		Sonar		Mechanical Harvesting	
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
Biological Indicators						
1a. Presence of Sensitive Fish Species ***Pre-Treatment*** Conducted in years 1-2 of EDCP for all sites, in years 3-5 for a representative number of sites.	Collect IEP Real Time Monitoring data, if available.	None.	Collect IEP Real Time Monitoring data, if available.	None.	Collect IEP Real Time Monitoring data, if available. If required, conduct fish surveys according to McGowan (1998).	Representative sample of harvested material examined by biologist to assess taking of sensitive fish species.
Post-Treatment Conducted in years 1-2 of the EDCP for a representative number of sites, in years 3-5 not conducted.	Presence of the following key threatened, endangered, or special status fish species during the pre-treatment phase would restrict DBW control activities: delta smelt, Sacramento splittail, Chinook salmon (any run), the Central Valley steelhead, pacific lamprey, river lamprey, longfin smelt, or green sturgeon.					
1b. Presence of Sensitive Wildlife and Plant Species ***Pre-Treatment*** Conducted in years 1-2 of EDCP for all sites, in years 3-5 for a representative number of sites.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol.
Post-Treatment Conducted in years 1-2 of the EDCP for a representative number of sites, in years 3-5 for a representative number of sites.	Presence of the following key threatened, endangered, or special status wildlife and plant species during the pre-treatment phase would restrict DBW control activities: ***Wildlife:*** California red-legged frog, western pond turtle, and giant garter snake. ***Plant species:*** Mason's liliaposis, California hibiscus, delta tule pea, and delta mudwort. ***Birds:*** California black rail, tricolored blackbird, and white-faced ibis.					
2. *Egeria* Biomass ***Pre- and Post-Treatment*** All sites.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.	Estimated for representative number of sites using Obrebski, et. al.'s 1998 protocol.
3. *Egeria* Fragments ***Pre- and Post-Treatment*** All sites.	None.	None.	None.	None.	Estimated for representative number of sites using an established protocol.	Estimated for representative number of sites using an established protocol.

a) Subject to change based on requirements of regulatory agencies.

EXHIBIT 1-8
Page 2 of 2

Pre-Treatment and Post-Treatment Monitoring Proposed for the *Egeria densa* Control Program[a]

Description of Monitoring Indicator and Timing of Pre- and Post-Treatment	Level of Monitoring for Each EDCP Method					
	Reward		Sonar		Mechanical Harvesting	
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
Chemical Indicators						
4. Chemical Levels in Sediment ***Pre- and Post-Treatment*** All sites.	None.	None.	None.	None.	N/A	N/A
5. Chemical Levels in Water Column ***Pre- and Post-Treatment*** All sites.	Measured by a laboratory using water samples.	Measured by a laboratory using water samples taken 48 and 96 hours post-treatment.	Measured by a laboratory using water samples.	Measured by a laboratory using water samples taken 7 days post-treatment.	N/A	N/A
6. Dissolved Oxygen (DO) ***Pre- and Post-Treatment*** All sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.
	Presence of DO less than 5 ppm in the hypolimnion would restrict Reward treatments.					
7. Water pH/Hardness ***Pre- and Post-Treatment*** All sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	N/A	N/A
Physical Indicators						
8. Water Temperature ***Pre- and Post-Treatment*** All sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	N/A	N/A
	Presence of low water temperatures would restrict treatments using Reward and Sonar.					
9. Water Flow ***Pre- and Post-Treatment*** All sites.	Measured using a Flow Meter.	Measured using a Flow Meter.	Measured using a Flow Meter.	Measured using a Flow Meter.	None.	None.
	Presence of high water flows would restrict treatments using Reward, Sonar, and Harvesting					
8. Water Turbidity ***Pre- and Post-Treatment*** All sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde.	N/A	N/A
	Presence of high turbidity would restrict Reward treatments.					

a) Subject to change based on requirements of regulatory agencies.

below a significant level. Information from post-treatment monitoring would allow the DBW to determine whether modifications to the EDCP or Komeen Research Trials are necessary.

The DBW would consult with appropriate state and federal regulatory agencies to identify the type and level of specific monitoring activities required for each of the proposed control methods. Based on post-treatment monitoring activities, the DBW would determine if subsequent treatments are necessary and make adjustments to field practices in order to meet EDCP objectives. DBW staff, USDA, CDFG, CDFA, DWR, or other approved State and federal agencies or private contractors may help perform monitoring activities.

The DBW may reduce the level of monitoring of certain post-treatment indicators over time as it gathers sufficient data to assess the efficacy and environmental effects of a treatment method. For example, the DBW may conduct more intense fragment monitoring following mechanical harvesting in the early stages of the EDCP. However, if the DBW finds that fragment counts do not vary significantly over time, the DBW would reduce its sampling efforts over time. The DBW would not reduce monitoring levels unless approved by appropriate regulatory agencies.

Exhibit 1-8 also shows the extent of the post-treatment monitoring proposed by the DBW for EDCP operations.

1.9.2 Pre-Treatment and Post-Treatment Monitoring of Two-Year Komeen Trials

Pre-Treatment Monitoring of Komeen Trials

As with the EDCP, the DBW would conduct pre-treatment monitoring of Komeen trial applications. The DBW would monitor the following pre-treatment indicators:

- Biological indicators
  - Presence of sensitive fish species
  - Presence of wildlife and plant species
  - *Egeria* biomass
  - *Egeria* fragments.
- Chemical indicators
  - Chemical levels in sediment
  - Copper levels in water column
  - Dissolved oxygen
  - Water pH/hardness

- Physical indicators
    - Water temperature
    - Water flow
    - Water turbidity.

Pre-treatment monitoring for Komeen trials is summarized in **Exhibit 1-9**, on the following pages.

Post-Treatment Monitoring of Komeen Trials

The DBW also would conduct post-treatment monitoring of the Komeen trials. Post-treatment monitoring for the two-year Komeen trials also is shown in Exhibit 1-9.

For aquatic sites, submersed plants often are used as indicator species for detection of metals whether from natural sources (e.g., erosion), mining, waste-discharge, or other non-point sources. Submersed aquatic plants accumulate metals both from roots and shoots directly bathed in the water column. Thus, the DBW would use non-target indicator plants either in natural populations or sequestered in netting materials to measure copper elevations both at the application site and at appropriate downstream locations.

The DBW would establish a monitoring "grid" (i.e., arrays) of fixed stations that would provide both pre-program levels and a continuous measurement of any changes to this baseline. Other stations isolated from the treatment sites would be used as control sites. Given the natural inputs of copper to the Delta, this grid of stations is essential as a reference point.

The DBW would use sampling stations strategically placed according to sediment transport, bathymetry, and tidal velocities. Management areas would be obtained via use of fluorescent dyes (e.g., Rhodamine WT). The DBW would use the following methods for post-treatment monitoring:

- *Fixed Sediment Monitoring Sites*

  Sediment and water sampling stations will be established in two areas: 1) high flow areas (i.e., with the most direct downstream contribution to upper SF Bay waters); and 2) low flow areas (i.e., having the most likely conditions for gradual accumulation of copper in unscoured sediments). Three stations for each type of flow would be used. The DBW identified the locations in the Delta are Sherman Island, Big Break, and Disappointment Slough. At each site the following would be monitored twice yearly (May and September) with samples replicated 5 times:

  1. Total copper in the upper 5 cm of the sediment
  2. Dissolved and ionic copper in sediment pore-water
  3. Sedimentation rates (using anchored collections)

EXHIBIT 1-9
Page 1 of 2

Pre-Treatment and Post-Treatment Monitoring Proposed for the Two-Year Komeen Research Trials[a]

Description of Monitoring Indicator	Level of Monitoring for Komeen Research Trials	
	Pre-Treatment	Post-Treatment
Biological Indicators		
1a. Presence of Sensitive Fish Species ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Collect IEP Real Time Monitoring data, if available. Pop net surveys conducted following McGowan (1998) protocol, if required.	Visual surveys of treated areas to spot any floating fish. These fish would subsequently be collected and identified.
1b. Presence of Sensitive Wildlife and Plant Species ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Survey species near each site using biologist and following an established protocol.	Survey species near each site using biologist and following an established protocol. Bioaccumulation of copper in *Egeria* and non-target plants also will be monitored.
2. *Egeria* Biomass ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	At a representative area within each site.	At a representative area within each site.
3. *Egeria* Fragments	None.	None.
Chemical Indicators		
4. Chemical Levels in Sediment ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Six sediment monitoring stations (3 high flow, 3 low flow) would be monitored for the following: 1) Total copper in upper 5cm of sediment 2) Dissolved and ionic copper in sediment pore-water 3) Sedimentation rate 4) Water and sediment pH and redox 5) Percent organic matter 6) Bottom (sediment surface) water temperature 7) Mid-depth water samples (for total, dissolved, and ionic).	Six sediment monitoring stations (3 high flow, 3 low flow) would be monitored for the following: 1) Total copper in upper 5cm of sediment 2) Dissolved and ionic copper in sediment pore-water 3) Sedimentation rate 4) Water and sediment pH and redox 5) Percent organic matter 6) Bottom (sediment surface) water temperature 7) Mid-depth water samples (for total, dissolved, and ionic).
5. Copper Levels in Water Column ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Measured using water samples submitted to a qualified lab.	Measured using water samples at 0, 3, 6, 12, 24, and 48 hours following treatment (both total and dissolved copper).
6. Dissolved Oxygen (DO) ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde at daily intervals for up to 10 days following treatment.
	Presence of DO less than 5 ppm in the hypolimnion would restrict Komeen trial treatments.	
7. Water pH/Hardness ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde at daily intervals for up to 10 days following treatment.

a) Subject to change based on requirements of regulatory agencies.

EXHIBIT 1-9
Page 2 of 2

Pre-Treatment and Post-Treatment Monitoring Proposed for the Two-Year Komeen Research Trials[a]

Description of Monitoring Indicator	Level of Monitoring for Komeen Research Trials	
	Pre-Treatment	Post-Treatment
Physical Indicators		
8. Water Temperature ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Measured using Hydrolab Datasonde.	Measured using Hydrolab Datasonde at 0, 3, 6, 12, 24, and 48 hours following treatment.
9. Water Flow ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Measured using a Flow Meter.	Measured using Flow Meter at 0, 3, 6, 12, 24, and 48 hours following treatment.
2. *Egeria* Biomass ***Pre- and Post-Treatment*** Conducted in years 1 and 2 for each of the three trial sites.	Calculated based on aerial photography and estimated depth at site.	Calculated based upon post-treatment aerial photography and estimated depth.

a) Subject to change based on requirements of regulatory agencies.

4. Water and sediment pH and redox
5. Percent organic matter
6. Bottom water temperature (i.e., at the sediment surface)
7. Mid-depth water samples for copper levels (total, dissolved, and ionic).

- *Bioaccumulation of Copper in Target and Non-Target Organisms*

  The DBW also would conduct monitoring to assess bioaccumulation in the target, *Egeria*, and other non-target plant species. *Egeria* within the treated sites and upstream stations would be analyzed for total copper. Two non-target species (such as coontail and Sago pondweed) would be sampled twice per year in the same stations as the sediment stations (or as near as possible). Samples would be taken in triplicate for each species. In addition, potted "indicator" plants would be placed in triplicate at stations at the beginning of each "treatment" year and sampled for total copper. These would provide the "lowest" starting background levels since they would be initially planted in copper-free water conditions.

- *Laboratory Study*

  The DBW also would conduct laboratory work to assess the impact of sediment copper load to aquatic invertebrates. In addition to the field sampling, sediments from the fixed stations would be used for laboratory bioassays of invertebrate responses. A suitable test organism (to be agreed upon by CDFG/USFWS) would be exposed to the sediments taken twice per year. Observations on mortality, behavior, and analysis of tissue levels of copper would be made. Amended field sediments would be used with added copper (as chelated copper) to provide a range from zero to 20 ppm in sediments. Responses of test organisms in these amended sediments would be recorded and compared to responses with un-adultered (native) sediments. Copper concentrations in the amended sediments would be analyzed. All tests with amended sediments would be replicated 5 times with at least three organisms per replicate.

- *Analysis and Reporting*

  Levels of copper, and species of copper, would be compared between 1) pre-treatment sites/samples; 2) upstream (control) sites/samples; downstream fixed stations/samples using acceptable standard variance analysis (i.e., ANOVA). Responses of invertebrates would be analyzed using probit analysis for amended sediments, and ANOVA for bioassayed field sediments.

  Quarterly reports would be prepared that document data to date. A final report would be prepared within 90 days after completion of the last sampling or bioassay of the two-year project.

1.10 Intended Uses of EIR

CEQA requires that the project description specify the intended uses of the EIR. This section identifies a list of agencies expected to use the EIR, the permits and other required approvals for the project, and the environmental review and consultation already conducted by the DBW.

1.10.1 List of Agencies Expected to Use the EIR

Exhibit 1-10, on the following page, identifies key users that the DBW expects will use this EIR. These stakeholders are represented by Federal, State, County, and local agencies making up the *Egeria densa* Task Force. The DBW established the Task Force at the beginning of this project (October, 1996) to provide input, guidance, and assistance with issues associated with this EIR.

Among those expected to use the EIR are environmental organizations, Delta residents, business owners, and recreational users. In February 1997, the DBW held several public meetings to inform these users of the proposed EDCP and to obtain initial input from Delta residents and property owners regarding the level of *Egeria* infestation in their localities. Three additional public outreach meetings were held in April 1998, where the DBW provided background on the CEQA process, and an overview of the EDCP.

1.10.2 Permits and Other Required Approvals

The California Department of Pesticide Regulations has registered each aquatic herbicide Reward, Sonar, and Komeen for use in California. Thus, use of Reward, Sonar A.S., Sonar SRP, and Komeen by the DBW would represent a legal application of an aquatic herbicide registered for use in the State of California. Prior to obtaining a registration, these herbicides are subjected to many years of research. Registration of an herbicide is considered the functional equivalent of an EIR for the purpose of CEQA.

EXHIBIT 1-10

Project Stakeholders

Egeria densa Task Force

Federal

- U.S. Department if Agriculture- Agricultural Research Service
- U.S. Department of Interior– Bureau of Reclamation
- U.S. Department of Interior– Fish and Wildlife Service

State

- Office of California Senator Richard Rainey
- California Department of Boating and Waterways
- California Department of Fish and Game
- California Department of Food and Agriculture
- California Department of Pesticide Regulation
- California Department of Water Resources
- California Water Resources Control Board
- Central Valley Regional Water Quality Control Board
- San Francisco University- Romberg Tiburon Center for Environmental Studies
- San Francisco Regional Water Quality Control Board

County

- Contra Costa County Agricultural Commissioner
- Sacramento County Agricultural Commissioner
- San Joaquin County Agricultural Commissioner

Local

- Contra Costa Water District
- Delta Mendota Water Authority
- Reclamation Districts

Private Citizens

- Delta Landowners
- Delta Businesses
- Delta Residents
- Fishermen
- Recreational Users

- ❑ DBW has coordinated and solicited input from the Task Force throughout the entire EIR process
- ❑ DBW has asked for formal comments from, and requested attendance at scoping meetings/informational consultations with various stakeholders

Enviromental Groups

- Delta Keeper
- Bay Keeper
- The Bay Institute
- Sierra Club
- Others

Take of Endangered Species

Section 7 of the Endangered Species Act (ESA) requires agencies to consult with the U.S. Fish and Wildlife Service if they determine that any action they fund, authorize, or carry out may affect a listed species or designated critical habitat. This project has the potential to take listed species and affect designated critical habitat. In order for the DBW to meet the objective of Section 7 the DBW must prepare a Biological Assessment (BA) to identify the proposed and/or listed species likely to be affected by the project. The DBW is currently preparing a BA in conjunction with this EIR. The DBW expects that the U.S. Fish and Wildlife Service would evaluate the potential for adverse impacts and issue a Biological Opinion, regarding the proposed EDCP and Two-Year Komeen Research Trials.

Discharges to Surface Water or Land

Concurrent with this EIR process, the DBW has submitted an application to the CVRWQCB for an NPDES (National Pollutant Discharge Elimination System Under the Clean Water Act, 33 U.S.C. 1251) permit. This NPDES permit is issued under both State and Federal law. The NPDES permit is a permit to discharge to surface water. The DBW is not certain that application of registered aquatic herbicides constitutes a discharge to surface waters. However, in order to assure full compliance with the permitting requirements, the DBW has submitted this permit application.

The DBW also may need a Waste Discharge Permit from the CVRWQCB for disposal of *Egeria* on land from harvesting operations. The CVRWQCB may waive this Waste Discharge Permit if an adequate management plan is prepared for *Egeria* disposal. A concern is that the runoff from *Egeria* decomposition could wash back into streams and the Delta.

Variance from Basin Plan Provisions

The DBW also has requested from the Central Valley Regional Water Quality Control Board a short-term variance from the Basin Plan provisions that may restrict use of EDCP control methods in Delta waters. The DBW submitted this variance request to the CVRWQCB in January, 2000.

1.10.3 Environmental Review and Consultation Already Conducted

The DBW sent out its Notice of Preparation (NOP) in November of 1998. The DBW received formal written comments from the following entities:

- Delta Keeper
- Californians for Alternatives to Toxics
- California Regional Water Quality Control Board
- Contra Costa Water District
- County of San Joaquin Sheriff-Coroner
- California Department of Transportation, Engineering Service Center, Office of Structure and Maintenance and Investigations
- County of Contra Costa Office of the Sheriff.

The DBW considered all of these comments in preparing this draft EIR.

The DBW also has received informal comments on the proposed EDCP from the *Egeria densa* Task Force, other State agency representatives, and the boating community. The DBW also has met with various stakeholder groups. The DBW has continually used these comments to adjust the proposed EDCP, as needed.

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